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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/862,379	05/22/2001	Narayanan Venkitaraman	CR00252M	8691

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EXAMINER
BRUCKART, BENJAMIN R

ART UNIT	PAPER NUMBER
2155	

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *02 February 2005*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-29* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-29* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Detailed Action

Status of Claims:

Claims 1-29 are pending in this Office Action.

The objection to the specification is withdrawn in light of applicant's amendment.

Claims 1-4, 6-20, 21-25, 26-29 remain rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,006,264 by Colby et al.

Claim 5 remains rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 6,006,264 by Colby et al in view of U.S. Patent No. 5,933,425 by Iwata.

Response to Arguments

Applicant's arguments filed in the amendment filed 2/2/05 have been fully considered but they are not persuasive. The reasons are set forth below.

Applicant's invention as claimed:

Claims 1-4, 6-20, 21-25, 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,006,264 by Colby et al.

Regarding claim 1, a method of operating an edge router (Colby: col. 4, lines 60 – col. 5, line 3), comprising:
        receiving a plurality of packets (Colby: col. 4, lines 60 – col. 5, line 3);
        determining a flow corresponding to the plurality of packets (Colby: col. 5, lines 52-col. 6, line 6);
        determining an incremental utility for each of the packets (Colby: col. 6, lines 42-63; col. 9, lines 1-20; QoS class, priorities and requirements);
        labeling each of the packets with a label as a function of the incremental utility (Colby: col. 8, lines 34-55; labeling by content records); and
        processing each of the packets based on the label (Colby: col. 8, lines 34-55; passed to the server).

Regarding claim 2, the method of claim 1, wherein the step of determining the incremental utility includes:
        obtaining a utility function corresponding to the flow (Colby: col. 6, lines 42-63; content rules);
        determining an intra-flow priority corresponding to each of the packets (Colby: col. 11, lines 19-30); and
        determining the incremental utility based on the utility function and the intra-flow priority (Colby: col. 6, lines 42-63; content rules; col. 11, lines 19-30).

Regarding claim 3, the method of claim 2, further comprising: obtaining the utility function from a device selected from the group consisting of a network server and an end host (Colby: col. 4, lines 60-col. 5, line 3; server and end station).

Regarding claim 4, the method of claim 2, wherein the utility function is stored in the edge router (Colby: col. 6, lines 35-45; Figure 2).

Regarding claim 6, the method of claim 2, wherein the intra-flow priority is based on packet labeling (Colby: col. 11, lines 19-30; label is the content type determined).

Regarding claim 7, the method of claim 6, wherein the packet labeling corresponds to one or more layers of encoding (Colby: col. 6, lines 7-28; different transport levels; col. 9, lines 1-20; col. 10, lines 18-21).

Regarding claim 8, the method of claim 7, wherein the encoding is selected from the group consisting of MPEG encoding (Colby: col. 10, lines 18-21) and RLM encoding (Colby: col. 9, Table 1 streaming video and audio for interactive).

Regarding claim 9, the method of claim 2, wherein the intra-flow priority is based on the content of a packet (Colby: col. 11, lines 19-30).

Regarding claim 10, the method of claim 9, wherein the content is selected from the group consisting of a TCP retry state, a control packet, and a data packet (Colby: col. 1, lines 37-47; payload).

Regarding claim 11, the method of claim 2, wherein the intra-flow priority is based on the reliability of the packet (Colby: col. 9, lines 1-12; QoS requirements).

Regarding claim 12, the method of claim 2, wherein the intra-flow priority is based on the sensitivity of the order of dropping packets in the flow (Colby: col. 9, lines 1-36; QoS requirements).

Regarding claim 13, the method of claim 2, further comprising: partitioning the utility function into a plurality of rate intervals (Colby: col. 6, lines 42-63; col. 8, lines 34-55; col. 9, lines 1-36; per unit of time).

Regarding claim 14, the method of claim 13, wherein each of the rate intervals represents a region of constant incremental utility (Colby: col. 9, lines 1-36; table 1; QoS class for streaming or interactivity).

Regarding claim 15, the method of claim 1, further comprising:
        partitioning the flow into a plurality of rate intervals (Colby: col. 9, lines 1-20); and
        determining the incremental utility based on the rate intervals (Colby: col. 9, lines 1-36; hot content, hit requests).

Regarding claim 16, the method of claim 15, wherein the step of partitioning includes:
        estimating the rate of the flow (Colby: col. 6, lines 20-34); and
        determining the number of packets per second that belong to each of the rate intervals based on at least one estimated rate and at least one packet size (Colby: col. 9, lines 1-36; content-size per unit of time).

Regarding claim 17, the method of claim 15, wherein the step of partitioning includes:
        estimating the rate of the flow (Colby: col. 6, lines 20-34); and
        determining the number of packets per second that belong to each of the rate intervals based on an epoch length and a packet size (Colby: col. 9, lines 1-36; content-size per unit of time).

Regarding claim 18, the method of claim 15, further comprising:
        calculating the incremental utility corresponding to each of the rate intervals assigned to a packet and based on a utility function (Colby: col. 9, lines 1-36; content-size).

Regarding claim 19, the method of claim 1, wherein the label is proportional to the incremental utility (Colby: col. 6, lines 42-63; col. 8, lines 34-55; col. 9, lines 1-36).

Regarding claim 20, the method of claim 1, wherein the label is proportional to the incremental utility combined with a stability factor (Colby: col. 9, lines 1-36; QoS requirements).

Regarding claim 21, a network router (Colby: col. 4, lines 60 – col. 5, line 3), comprising:
        means for receiving a plurality of packets (Colby: col. 4, lines 60 – col. 5, line 3);
        means for determining a flow corresponding to the plurality of packets (Colby: col. 5, lines 52-col. 6, line 6);
        means for determining an incremental utility for each of the packets (Colby: col. 6, lines 42-63; col. 9, lines 1-20);
        means for labeling each of the packets with a label as a function of the incremental utility (Colby: col. 6, lines 42-63; col. 8, lines 34-55; labeling by content records); and
        means for processing each of the packets based on the label (Colby: col. 8, lines 34-55; passed to the server).

Regarding claim 22, the router of claim 21, wherein the means for determining the incremental utility includes:
        means for obtaining a utility function corresponding to the flow (Colby: col. 6, lines 42-63; content rules);
        means for determining an intra-flow priority corresponding to each of the packets (Colby: col. 11, lines 19-30); and
        means for determining the incremental utility based on the utility function and the intra-flow priority (Colby: col. 6, lines 42-63; content rules; col. 11, lines 19-30).

Regarding claim 23, the router of claim 22, further comprising: means for partitioning the utility function into a plurality of rate intervals (Colby: col. 9, lines 1-36; per unit of time).

Regarding claim 24, the router of claim 22, further comprising: means for partitioning the utility function into a plurality of rate intervals (Colby: col. 9, lines 1-36; per unit of time).

Regarding claim 25, the router of claim 21, further comprising:
        means for partitioning the flow into a plurality of rate intervals (Colby: col. 9, lines 1-36; per unit of time); and
        means for determining the incremental utility based on the rate intervals (Colby: col. 9, lines 1-36; calculate the throughput of all flows per unit of time).

Regarding claim 26, a computer-usable medium storing a computer program for directing a network router (Colby: col. 4, lines 60 – col. 5, line 3) to perform the steps of:
        receiving a plurality of packets (Colby: col. 4, lines 60 – col. 5, line 3);
        determining a flow corresponding to the plurality of packets (Colby: col. 5, lines 52-col. 6, line 6);
        determining an incremental utility for each of the packets (Colby: col. 6, lines 42-63; col. 9, lines 1-20); and
        labeling each of the packets with a label as a function of the incremental utility (Colby: col. 6, lines 42-63; col. 8, lines 34-55; labeling by content records).

Regarding claim 27, the computer-usable medium of claim 26, wherein the step of determining the incremental utility includes:
        obtaining a utility function corresponding to the flow (Colby: col. 6, lines 42-63; content rules);
        determining an intra-flow priority corresponding to each of the packets (Colby: col. 11, lines 19-30); and

determining the incremental utility based on the utility function and the intra-flow priority (Colby: col. 6, lines 42-63; content rules; col. 11, lines 19-30).

Regarding claim 28, the computer-usable medium of claim 27, further comprising: partitioning the utility function into a plurality of rate intervals (Colby: col. 9, lines 1-36; per unit of time).

Regarding claim 29, the computer-usable medium of claim 26, further comprising:
        partitioning the flow into a plurality of rate intervals (Colby: col. 9, lines 1-36; per unit of time); and
        determining the incremental utility based on the rate intervals (Colby: col. 9, lines 1-36; calculate the throughput of all flows per unit of time).

Claim 5 is rejected under 35 U.S.C. 103(a) as being anticipated by U.S. Patent No. 6,006,264 by Colby et al in view of U.S. Patent No. 5,933,425 by Iwata.

Regarding claim 5,
        The Colby reference teaches the method of claim 2.
        The Colby reference does not explicitly state sequential integers but does teach use of a hot count to traffic bursts requests.
        The Iwata reference teaches calculating the utility function based on a rule corresponding to one or more incremental utilities that are sequential integers (Iwata: col. 4, lines 44-67).
        The Iwata reference further teaches the invention selects an optimal path in real time meeting the QoS parameter requirements (Iwata: col. 4, lines 30-54).
        Therefore it would have been obvious at the time of the invention to one of ordinary skill in the art to create the method of operating an edge router as taught by Colby while employing sequential integers as taught by Iwata in order to select an optimal path in real time meeting the QoS parameter requirements (Iwata: col. 4, lines 30-54).

REMARKS

        No amendments to the claims have been made.

The Applicant Argues:

        The Colby reference does not teach the limitation involving "labeling each of the packets with a label as a function of the incremental utility" and "processing each of the packets based on the label" as cited in independent claims 1, 21 and 26.

        In response, the examiner respectfully submits:

        The Colby reference does teach the cited portion. Colby teaches information is transmitted across a network in packets (Colby: col. 4, lines 63-67). The content aware flow switch analyzes the packets and labels them based on their destination IP address, protocol, source address, port numbers, quality of service requirements and demand (Colby: col. 6, lines 13-28; col. 9, lines 1-20). The extracted information: content-size, content-type, filename extension, QoS class, delay, minimum bandwith and frame loss ration are all labels and are used to categorize the packets for processing. Colby also teaches labeling packets with values or status

indicators (Colby: col. 11, lines 11-30). Based on the information gathered, the switch processes

or routes the packets based on the label establishing a connection (Colby: col. 6, lines 50-56).

Because of the broad breadth of the claim limitation, Colby reads openly on the claim

language. If this is indeed the novel aspect of the invention, the applicant is encouraged to further

define this limitation with details.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Benjamin R Bruckart whose telephone number is (571) 272-

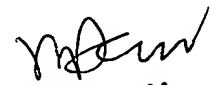3982. The examiner can normally be reached on 8:00-5:30PM with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin R Bruckart
Examiner
Art Unit 2155

brb

HOSAIN ALAM
SUPERVISORY PATENT EXAMINER